Seat No. : _____

AG-124

April-2025

B.Sc., Sem.-VI

CC-311 : Microbiology

(Biotechnology)

Time : 2:30 Hours] **[Max. Marks : 70**

Instructions : (1) **All** questions are compulsory.
(2) Figures on the right indicates marks.
(3) Mention correct question number against the answer.
(4) Draw figures wherever necessary.

1. Describe the major areas of biotechnology and their significance in different sectors. **14**

OR

1. (A) Discuss the key milestones in the history of biotechnology. **7**
(B) Differentiate between old and new biotechnology. **7**

2. Explain different types of centrifugations with their applications. **14**

OR

2. (A) Explain principle, method and applications of HPLC. **7**
(B) Describe the steps involved in SDS PAGE. **7**

3. Describe techniques of plant tissue culture and its significance in plant biotechnology. **14**

OR

3. (A) Explain the principle, method and applications of primary and secondary animal cell culture. **7**
(B) What is CRISPR-Cas9 ? Explain its applications in gene editing. **7**

4. Discuss applications of genetic engineering in crop improvement with suitable examples. **14**

OR

4. (A) Explain the essential features of animals suitable for gene transfer. **7**
(B) Describe major industrial applications of enzymes. **7**

5. Give short and specific answers in **1-2** lines only : (any **seven**) **14**

(1) Write two applications of biotechnology in food industry.

(2) Define Green biotechnology.

(3) Name two research institute of biotechnology in India.

(4) Mention two applications of TLC.

(5) Write any two applications of UV-Vis spectroscopy.

(6) Name any two dyes used to visualize DNA in agarose gel electrophoresis.

(7) What is histotypic culture ?

(8) What is callus culture ?

(9) Mention any two uses of northern blotting technique.

(10) Write examples of any two GMO crops.

(11) Name two therapeutic enzymes.

(12) What is IPR ?